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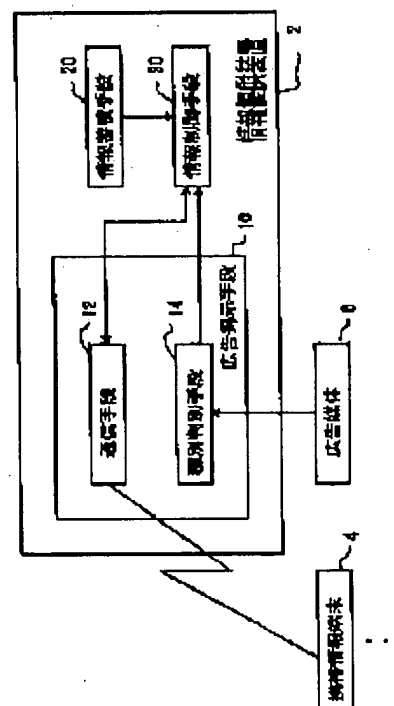
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ITO HARUHISA

(54) METHOD AND DEVICE FOR PROVIDING INFORMATION AND STORAGE MEDIUM
STORING INFORMATION CONTROL PROGRAM

(57)Abstract:

PROBLEM TO BE SOLVED: To enable a device to obtain more detailed information of the substance in a place and a time in which an information receiving person is concerned about or interested in the advertised substance by performing information communication in accordance with kinds of advertisement information indicated by an advertisement medium through wireless communication such as optical communication between a portable information terminal and an advertisement indication part.

SOLUTION: An information providing device 2 is provided with a communication means 2 connected to a portable information terminal 4 through wireless communication such as optical communication, and consists of an advertisement indication means 10 performing the more information communication of information about advertisement indicated by an advertisement medium 6



between the portable information terminal 4 and it. The advertisement indication means 10 is provided with a kinds discriminating means 14 discriminating the kinds of the advertisement indicated by the advertisement medium 6. Therefore, when a user watches the advertisement and requests the more information of the interested advertisement, receiving the detailed information instantly can be performed by utilizing the portable information terminal 4 having a wireless communication function such as an optical communication function or the like.

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PRIOR ART

[Description of the Prior Art] Conventionally, the abstract of the contents of substance which charms an information receiver's interest and concern about the substance advertized with an advertising poster hung in a train is displayed on advertising media, such as paper, and advertisement by an advertising poster hung in a train is performed by inserting advertising media with a binder instrument so that advertising media can be hung.

[0003] The information receiver who has held interest and concern about advertising substance can obtain the information about substance within limits displayed on the hung advertising media.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]However, there are the following problems in advertisement by the above-mentioned conventional advertising poster hung in a train. Since only the information on the range displayed on advertising media can be obtained at a place when the information receiver has held [1st] interest and concern, In order to actually judge whether it is the information which the contents of the substance originally needed, the amount of information runs short, and in order to know more the contents currently advertized in details as the result, it may not come to be decided that it will obtain the substance currently advertized for example.

[0005]An information receiver holds interest even if the 2nd, and even if it comes to decide that he would like to know in detail about the contents of substance, there is nothing by the environment where the contents of substance can be investigated immediately, and by the time it will be in an available state, a time and spatial difference will actually produce the contents of the substance. Therefore, an information receiver may forget that the contents of the substance which has held interest with an advertisement come to hand, or may lose the interest about the substance.

[0006]This invention is the place and time which have held interest and concern in view of the above-mentioned conventional problem to the substance in which the information receiver is advertised in advertisement information providing services, such as an advertising poster hung in a train, a signboard, and a video advertisement, It aims at offer of the information service method with which the more detailed information about the substance is provided, an information providing device, and the storage which stored the information-control program.

[0007]This invention aims at offer of the advertising bulletin device used in this advertisement information providing service.

[Translation done.]

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MEANS

[Means for Solving the Problem]A Personal Digital Assistant with [this invention is an information service method in providing service of advertisement information using advertising media such as an advertising poster hung in a train, a signboard, and a video advertisement, and] wireless communication functions, such as optical communication functions, Information and telecommunications according to classification of advertisement information expressed with the above-mentioned advertising media via radio, such as optical communications, in relation to the above-mentioned advertising media between advertising notice parts with wireless communication functions, such as optical communication functions, are performed. [0009]Therefore, according to this invention, the information receiver can acquire information about the advertisement from an advertising notice part on the spot which has held interest and concern in an advertisement put up for advertising media. In an information service method of above-mentioned this invention, classification of the above-mentioned advertisement information may be distinguished in the above-mentioned advertising notice part.

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EFFECT OF THE INVENTION

[Effect of the Invention]As mentioned above, by using a Personal Digital Assistant with wireless communication functions, such as optical communication functions, when the further information on the advertisement in which the user had interest charmed seeing an advertisement is searched for according to the information service method and information providing device of this invention, It becomes possible to receive offer of immediately more detailed information on that spot.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention]This invention relates to the information service method which provides an efficient information service in advertisement information providing services, such as an advertising poster hung in a train, a signboard, and a video advertisement, a device, and the storage which stored the information-control program.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a principle explanatory view of this invention.

[Drawing 2]It is a principle lineblock diagram of this invention.

[Drawing 3]It is a figure showing the operation sequence chart of the information service system by one example of this invention.

[Drawing 4]It is a lineblock diagram of the advertisement information providing system by one example of this invention.

[Drawing 5]It hangs, while being based on one example of this invention, and it is a schematic diagram of a binder part.

[Drawing 6]It is a schematic diagram of the information kind discrimination section by one example of this invention.

[Description of Notations]

2 Information providing device

4 Personal Digital Assistant

6 Advertising media

10 Advertising notice means

12 Means of communication

14 Classification discriminating means

20 Information accumulation means

30 Information control means

[Translation done.]

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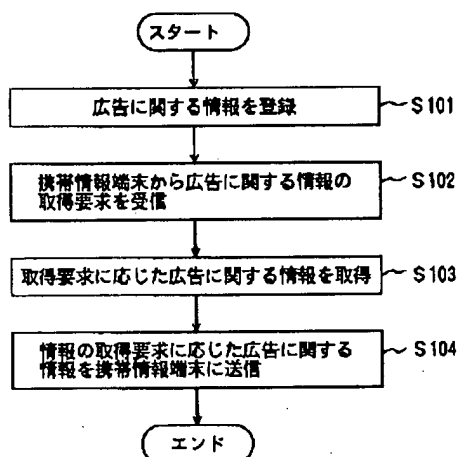
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DRAWINGS

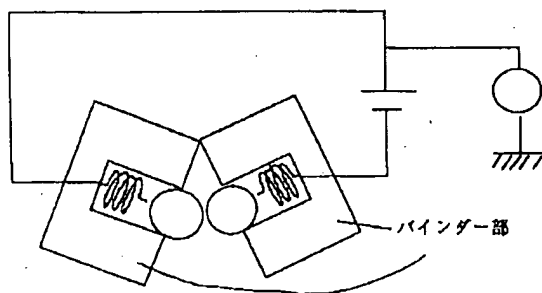
[Drawing 1]

本発明の原理説明図



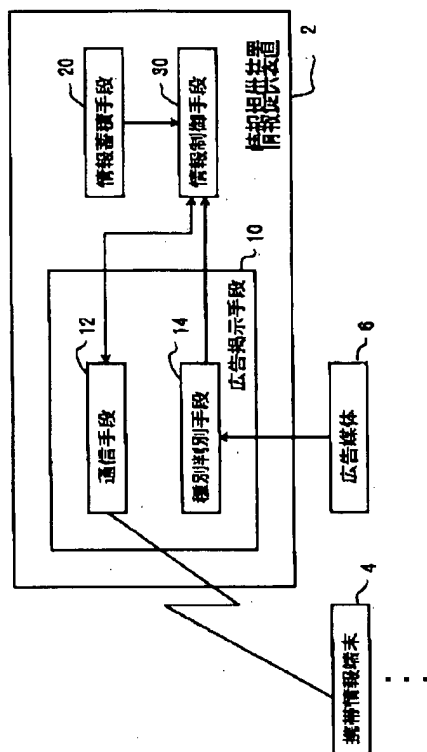
[Drawing 6]

本発明の一実施例による情報種別判別部の概略図



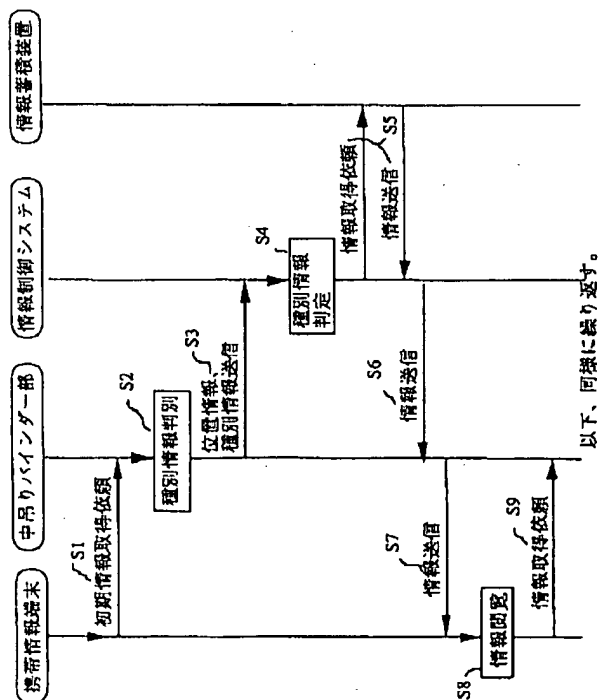
[Drawing 2]

本発明の原理構成図



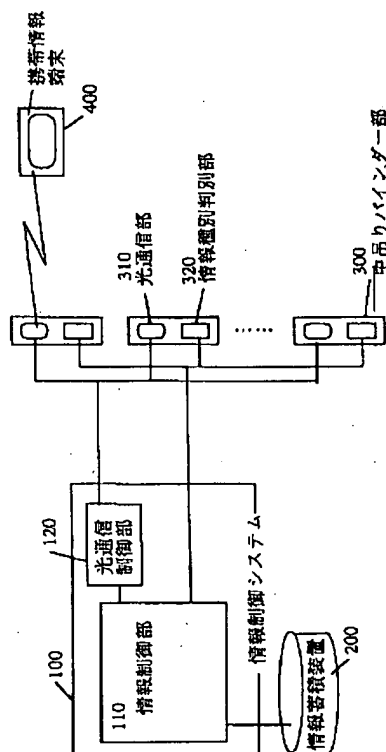
[Drawing 3]

本発明の一実施例による情報提供システムの
動作シーケンス説明図



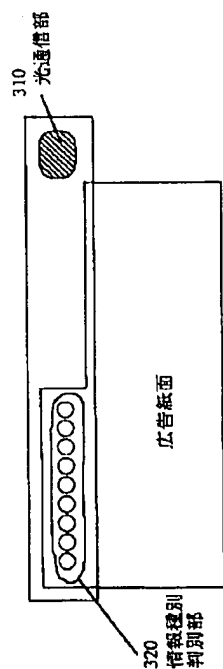
[Drawing 4]

本発明の一実施例による広告情報提供システムの構成図



[Drawing 5]

本発明の一実施例による中吊りバインダー部の概略図



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EXAMPLE

[Example]Drawing 4 is a lineblock diagram of the advertisement information providing system by one example of this invention. As shown in the figure, an advertisement information providing system is hung while being connected via Personal Digital Assistant 400, the information personal digital assistant 400, and the optical communication part 310 for every user which are information receivers, and has the binder part 300. It hangs inside and the binder part 300 has further the information kind discrimination section 320 which distinguishes the classification of the advertisement which hangs inside and is put up for the binder part 300.

[0022]The optical communication control part 120 which hangs an advertisement information providing system among each further, and controls the optical communication part 310 of the binder part 300, It hangs among each and has the information control system 100 which consists of the information control part 110 which judges which information is demanded from Personal Digital Assistant 400, and is controlled based on the information from the binder part 3001. An advertisement information providing system contains the information storing device 200 holding the information which a user actually peruses.

[0023]Hereafter, the example of drawing 4 is described according to the operating sequence of drawing 3.

Step 1 : the user who has Personal Digital Assistant 400 with optical communication functions, When there is an advertisement which is looking at the advertising poster hung in a train, and had interest charmed, the optical communication part of its own Personal Digital Assistant 400 is turned to the optical communication part 310 of the binder part 300 which has hung the advertising poster hung in a train, and the signal of an initial information demand is emitted.

[0024]Step 2: Hang, while receiving the signal of the initial information demand, and the optical communication part 310 of the binder part 300 stretches a connection between Personal Digital Assistants 400. The actually hung information kind is distinguished by the information

kind discrimination section 320. Here, the example the example of an information kind discrimination section is considered to be is described. While drawing 5 is based on the example of this invention, it is hung, and it is a schematic diagram of a binder part. It hangs inside and the binder part 300 has the information kind discrimination section 320 in the one side. This information kind discrimination section 320 is constituted by the arrangement of some switches (shown to the figure by O), and reads several bits type information using this switch.

[0025]Drawing 6 is a figure showing the structure of a switch where one switch was seen from the side about drawing 5. As shown in the figure, a binder part faces across an advertisement paper side. At this time, the place where the hole was made in the position corresponding to a sphere, and the place in which the hole is not made are established in the advertisement paper sandwiched by the sphere attached to the binder part. At the place in which the hole is made, since the sphere and sphere in the both sides of space contact, it energizes. On the other hand, at the place in which the hole is not made, since a sphere and a sphere do not contact, energization does not produce them. In this way, the information kind of the advertisement paper actually hung is expressed with the spherical number, i.e., several figures bit expressed with {0, 1} for a digit number of the switch, by the existence of the hole on space, and the type information of the advertisement put up using this is distinguished.

[0026]It hangs among Step 3:, and the position information on the binder part 300 and the type information of the put-up advertisement hang inside, and are transmitted to the information control part 110 of the information control system 100 from the binder part 300.

Step 4: Judge whether type information of the information control part 110 which received position information and type information corresponds with the type information of the advertisement which should be hung in the present relevance part. For example, when the result of a judgment is not in agreement for an advertising re-covering mistake or the check mistake of a re-covering failure, the type information of the advertisement which should be hung now may be used.

[0027]Step 5: The information control part 110 acquires the initial information for an advertisement hung from the information storing device 200, when type information is in agreement with the classification of the advertisement which should be hung now.

Step 6: The information control part 110 transmits the initial information received from the information storing device 200 to the optical communication part 310 shown by position information.

[0028]Step 7: The optical communication part 310 which received initial information transmits initial information to Personal Digital Assistant 400 holding the connection stretched in Step 2.

Step 8: Initial information is described by markup languages, such as HTML, for example, and Personal Digital Assistant 400 uses the browser which understands the markup language

concerned, and displays the received initial information on a user. A user's point which can click the anchor section equivalent to the advertisement which perused the screen of the browser where the initial information related to the advertisement put up for the advertising poster hung in a train was displayed, and had interest charmed is advantageous. The information sent to Personal Digital Assistant 400 should just be the recording mode which does not need to describe by a markup language and can not necessarily follow the course to more detailed information.

[0029]Step 9: In order that a user may acquire the linked information, he turns the optical communication part of his own Personal Digital Assistant 400 to the optical communication part 310 of the binder part 300, and emits the signal of the further information requirements. Hereafter, a user is provided with the further information by repeating Step 2 thru/or Step 8 similarly.

In the various advertisements of the advertisement published by the advertising poster hung in a train in public transportation facilities, such as a train and a bus, the department store, etc., a signboard, or a video advertisement, the information service system by the example of above-mentioned this invention is available.

[0030]Although the above-mentioned example explains based on the constituent features of an information providing device, It is also possible to offer service which builds each constituent features of the information providing device 100 by software (program), stores in the disk unit etc., installs in the computer of an information providing device if needed, and provides advertisement information, without being limited to this example. It is also possible to store the built program in portable storages, such as a floppy disk and CD-ROM, and to use it general-purpose in the scene using such a system.

[0031]Change and application are variously possible for this invention within a claim, without being limited to the above-mentioned example.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the information service method which provides an efficient information service in advertisement information providing services, such as an advertising poster hung in a train, a signboard, and a video advertisement, a device, and the storage which stored the information-control program.

[0002]

[Description of the Prior Art]Conventionally, the abstract of the contents of substance which charms an information receiver's interest and concern about the substance advertized with an advertising poster hung in a train is displayed on advertising media, such as paper, and advertisement by an advertising poster hung in a train is performed by inserting advertising media with a binder instrument so that advertising media can be hung.

[0003]The information receiver who has held interest and concern about advertising substance can obtain the information about substance within limits displayed on the hung advertising media.

[0004]

[Problem(s) to be Solved by the Invention]However, there are the following problems in advertisement by the above-mentioned conventional advertising poster hung in a train. Since only the information on the range displayed on advertising media can be obtained at a place when the information receiver has held [1st] interest and concern, In order to actually judge whether it is the information which the contents of the substance originally needed, the amount of information runs short, and in order to know more the contents currently advertized in details as the result, it may not come to be decided that it will obtain the substance currently advertized for example.

[0005]An information receiver holds interest even if the 2nd, and even if it comes to decide that

he would like to know in detail about the contents of substance, there is nothing by the environment where the contents of substance can be investigated immediately, and by the time it will be in an available state, a time and spatial difference will actually produce the contents of the substance. Therefore, an information receiver may forget that the contents of the substance which has held interest with an advertisement come to hand, or may lose the interest about the substance.

[0006] This invention is the place and time which have held interest and concern in view of the above-mentioned conventional problem to the substance in which the information receiver is advertised in advertisement information providing services, such as an advertising poster hung in a train, a signboard, and a video advertisement, It aims at offer of the information service method with which the more detailed information about the substance is provided, an information providing device, and the storage which stored the information-control program.

[0007] This invention aims at offer of the advertising bulletin device used in this advertisement information providing service.

[0008]

[Means for Solving the Problem] A Personal Digital Assistant with [this invention is an information service method in providing service of advertisement information using advertising media such as an advertising poster hung in a train, a signboard, and a video advertisement, and] wireless communication functions, such as optical communication functions, Information and telecommunications according to classification of advertisement information expressed with the above-mentioned advertising media via radio, such as optical communications, in relation to the above-mentioned advertising media between advertising notice parts with wireless communication functions, such as optical communication functions, are performed.

[0009] Therefore, according to this invention, the information receiver can acquire information about the advertisement from an advertising notice part on the spot which has held interest and concern in an advertisement put up for advertising media. In an information service method of above-mentioned this invention, classification of the above-mentioned advertisement information may be distinguished in the above-mentioned advertising notice part.

[0010] Drawing 1 is a figure for explaining a principle of this invention. As shown in the figure, this invention is characterized by an information service method comprising the following. A stage of registering information about an advertisement expressed by advertising media (Step 101).

A stage of receiving an acquisition request of information about an advertisement expressed by the put-up above-mentioned advertising media via radio, such as optical communications, from a Personal Digital Assistant (Step 102).

A stage which acquires information about an advertisement according to an acquisition request

of the above-mentioned information out of information about an advertisement registered [above-mentioned] (Step 103).

A stage which transmits information about an advertisement according to an acquisition request of the above-mentioned information to the above-mentioned Personal Digital Assistant via radio, such as optical communications (Step 104).

[0011]A stage (Step 103) which acquires the above-mentioned information may distinguish an advertising classification expressed to advertising media put [above-mentioned] up, and may acquire information about an advertisement corresponding out of an advertisement registered [above-mentioned] based on classification of the above-mentioned advertisement. Drawing 2 is a principle lineblock diagram of an information providing device of this invention used in providing service of advertisement information using advertising media, such as an advertising poster hung in a train, a signboard, and a video advertisement.

[0012]The information providing device 2 of this invention has the means of communication 12 connected to Personal Digital Assistant 4 via radio, such as optical communications, and consists of an advertising notice means 10 to perform information and telecommunications of information about an advertisement expressed with the advertising media 6 between above-mentioned Personal Digital Assistants 4. The information providing device 2 of this invention has an advantageous point of having further the information accumulation means 20 which accumulates information about an advertisement expressed with the above-mentioned advertising media 6. In this case, the above-mentioned advertising notice means 10 sends information corresponding to an information acquisition request received from above-mentioned Personal Digital Assistant 4 to above-mentioned Personal Digital Assistant 4 in information about an advertisement accumulated in the above-mentioned information accumulation means 20.

[0013]It is connected to the above-mentioned advertising notice means 10, and the information providing device 2 of this invention receives the above-mentioned information acquisition request from the above-mentioned advertising notice means 10. A point of having further the information control means 30 which takes out information corresponding to the above-mentioned information acquisition request out of information about an advertisement accumulated in the above-mentioned information accumulation means 20, and returns taken-out information to the above-mentioned advertising notice means 10 is advantageous. The above-mentioned advertising notice means 10 supplies the above-mentioned information acquisition request to the above-mentioned information control means 30, and acquires information corresponding to the above-mentioned information acquisition request from the above-mentioned information control means 30.

[0014]The above-mentioned advertising notice means 10 has an advantageous point of having

the classification discriminating means 14 which distinguishes an advertising classification expressed with the above-mentioned advertising media 6. In advertisement information service using advertising media, such as an advertising poster hung in a train, a signboard, and a video advertisement, this invention is used further. It is the advertising bulletin device 10 which performs information and telecommunications of information about an advertisement which has the means of communication 12 connected to a Personal Digital Assistant via radio, such as optical communications, and was expressed with the above-mentioned advertising media between the above-mentioned Personal Digital Assistants.

[0015]The above-mentioned advertising bulletin device 10 has an advantageous point of having the classification discriminating means 14 which distinguishes an advertising classification expressed with the above-mentioned advertising media. In providing service of advertisement information using advertising media, such as an advertising poster hung in a train, a signboard, and a video advertisement, this invention is the storage which stored an information-control program. A process which a storage of this invention makes information about an advertisement expressed by the above-mentioned advertising media register, A process which makes an acquisition request of information about an advertisement expressed by the above-mentioned advertising media put up from a Personal Digital Assistant receive, An information-control program which consists of a process which makes information about an advertisement acquire according to an acquisition request of the above-mentioned information, and a process which makes information about an advertisement according to an acquisition request of the above-mentioned information transmit to the above-mentioned Personal Digital Assistant is stored out of information about an advertisement registered [above-mentioned].

[0016]

[Embodiment of the Invention]The advertising-poster-hung-in-a-train information service system which performs the information and telecommunications by optical communications hereafter between a Personal Digital Assistant with optical communication functions and the advertising-poster-hung-in-a-train notice part which has optical communication functions and puts up an advertisement is explained. Drawing 3 is a figure explaining the operating sequence of the information service system by one example of this invention. Hereafter, with reference to the figures, the principle of operation of the information service system by this invention is explained.

[0017]The optical communication part of a Personal Digital Assistant is hung while putting up an advertisement, and the acquisition request of initial information is generated towards the optical communication part of a binder part (Step 1). It hangs inside, and a binder part distinguishes the classification of the advertisement of advertising media actually hung (Step 2), hangs it inside, and transmits the position information on a binder part, and advertising type information to an information control system (Step 3).

[0018]An information control system judges advertising type information (Step 4), acquires applicable information from an information storing device (Step 5), based on the transmitted position information, while it corresponds, it hangs it, and it transmits advertising initial information to a binder part (Step 6). It hangs inside and a binder part transmits the advertising initial information sent from the information control system to a Personal Digital Assistant (Step 7).

[0019]A Personal Digital Assistant displays the sent initial information, and a user peruses the information (Step 8). When a user wants to acquire still more detailed information, the optical communication part of a Personal Digital Assistant is hung inside, and the further information acquisition request is performed towards the optical communication part of a binder part (Step 9). The above-mentioned step 2 thru/or Step 8 are performed by this repeatedly, and the user can peruse the further information about an advertisement.

[0020]Thus, according to the information service system of one example of this invention, when the user who looked at the advertising poster hung in a train demands the further information about the advertisement in which interest was pulled, it becomes possible to enjoy offer of promptly more detailed information on that spot.

[0021]

[Example]Drawing 4 is a lineblock diagram of the advertisement information providing system by one example of this invention. As shown in the figure, an advertisement information providing system is hung while being connected via Personal Digital Assistant 400, the information personal digital assistant 400, and the optical communication part 310 for every user which are information receivers, and has the binder part 300. It hangs inside and the binder part 300 has further the information kind discrimination section 320 which distinguishes the classification of the advertisement which hangs inside and is put up for the binder part 300.

[0022]The optical communication control part 120 which hangs an advertisement information providing system among each further, and controls the optical communication part 310 of the binder part 300, It hangs among each and has the information control system 100 which consists of the information control part 110 which judges which information is demanded from Personal Digital Assistant 400, and is controlled based on the information from the binder part 3001. An advertisement information providing system contains the information storing device 200 holding the information which a user actually peruses.

[0023]Hereafter, the example of drawing 4 is described according to the operating sequence of drawing 3.

Step 1 : the user who has Personal Digital Assistant 400 with optical communication functions, When there is an advertisement which is looking at the advertising poster hung in a train, and had interest charmed, the optical communication part of its own Personal Digital Assistant 400

is turned to the optical communication part 310 of the binder part 300 which has hung the advertising poster hung in a train, and the signal of an initial information demand is emitted. [0024]Step 2: Hang, while receiving the signal of the initial information demand, and the optical communication part 310 of the binder part 300 stretches a connection between Personal Digital Assistants 400. The actually hung information kind is distinguished by the information kind discrimination section 320. Here, the example the example of an information kind discrimination section is considered to be is described. While drawing 5 is based on the example of this invention, it is hung, and it is a schematic diagram of a binder part. It hangs inside and the binder part 300 has the information kind discrimination section 320 in the one side. This information kind discrimination section 320 is constituted by the arrangement of some switches (shown to the figure by O), and reads several bits type information using this switch.

[0025]Drawing 6 is a figure showing the structure of a switch where one switch was seen from the side about drawing 5. As shown in the figure, a binder part faces across an advertisement paper side. At this time, the place where the hole was made in the position corresponding to a sphere, and the place in which the hole is not made are established in the advertisement paper sandwiched by the sphere attached to the binder part. At the place in which the hole is made, since the sphere and sphere in the both sides of space contact, it energizes. On the other hand, at the place in which the hole is not made, since a sphere and a sphere do not contact, energization does not produce them. In this way, the information kind of the advertisement paper actually hung is expressed with the spherical number, i.e., several figures bit expressed with {0, 1} for a digit number of the switch, by the existence of the hole on space, and the type information of the advertisement put up using this is distinguished.

[0026]It hangs among Step 3:, and the position information on the binder part 300 and the type information of the put-up advertisement hang inside, and are transmitted to the information control part 110 of the information control system 100 from the binder part 300.

Step 4: Judge whether type information of the information control part 110 which received position information and type information corresponds with the type information of the advertisement which should be hung in the present relevance part. For example, when the result of a judgment is not in agreement for an advertising re-covering mistake or the check mistake of a re-covering failure, the type information of the advertisement which should be hung now may be used.

[0027]Step 5: The information control part 110 acquires the initial information for an advertisement hung from the information storing device 200, when type information is in agreement with the classification of the advertisement which should be hung now.

Step 6: The information control part 110 transmits the initial information received from the information storing device 200 to the optical communication part 310 shown by position

information.

[0028]Step 7: The optical communication part 310 which received initial information transmits initial information to Personal Digital Assistant 400 holding the connection stretched in Step 2.

Step 8: Initial information is described by markup languages, such as HTML, for example, and Personal Digital Assistant 400 uses the browser which understands the markup language concerned, and displays the received initial information on a user. A user's point which can click the anchor section equivalent to the advertisement which perused the screen of the browser where the initial information related to the advertisement put up for the advertising poster hung in a train was displayed, and had interest charmed is advantageous. The information sent to Personal Digital Assistant 400 should just be the recording mode which does not need to describe by a markup language and can not necessarily follow the course to more detailed information.

[0029]Step 9: In order that a user may acquire the linked information, he turns the optical communication part of his own Personal Digital Assistant 400 to the optical communication part 310 of the binder part 300, and emits the signal of the further information requirements. Hereafter, a user is provided with the further information by repeating Step 2 thru/or Step 8 similarly.

In the various advertisements of the advertisement published by the advertising poster hung in a train in public transportation facilities, such as a train and a bus, the department store, etc., a signboard, or a video advertisement, the information service system by the example of above-mentioned this invention is available.

[0030]Although the above-mentioned example explains based on the constituent features of an information providing device, It is also possible to offer service which builds each constituent features of the information providing device 100 by software (program), stores in the disk unit etc., installs in the computer of an information providing device if needed, and provides advertisement information, without being limited to this example. It is also possible to store the built program in portable storages, such as a floppy disk and CD-ROM, and to use it general-purpose in the scene using such a system.

[0031]Change and application are variously possible for this invention within a claim, without being limited to the above-mentioned example.

[0032]

[Effect of the Invention]As mentioned above, by using a Personal Digital Assistant with wireless communication functions, such as optical communication functions, when the further information on the advertisement in which the user had interest charmed seeing an advertisement is searched for according to the information service method and information providing device of this invention, It becomes possible to receive offer of immediately more detailed information on that spot.

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CLAIMS

[Claim(s)]

[Claim 1]Providing service of advertisement information using advertising media, such as an advertising poster hung in a train, a signboard, and a video advertisement, characterized by comprising the following.

A Personal Digital Assistant with wireless communication functions, such as optical communication functions.

It relates to the above-mentioned advertising media, and they are wireless communication functions, such as optical communication functions.

[Claim 2]The information service method according to claim 1, wherein classification of the above-mentioned advertisement information is distinguished in the above-mentioned advertising notice part.

[Claim 3]Providing service of advertisement information using advertising media, such as an advertising poster hung in a train, a signboard, and a video advertisement, characterized by comprising the following.

A stage of registering information about an advertisement expressed by the above-mentioned advertising media.

A stage of receiving an acquisition request of information about an advertisement expressed by the put-up above-mentioned advertising media via radio, such as optical communications, from a Personal Digital Assistant.

A stage which acquires information about an advertisement according to an acquisition request of the above-mentioned information out of information about an advertisement registered [above-mentioned].

A stage which transmits information about an advertisement according to an acquisition request of the above-mentioned information to the above-mentioned Personal Digital Assistant

via radio, such as optical communications.